CLAIMS:

1. A method comprising:

measuring a cumulative emission spectrum for each of a plurality of color channels of a display with the respective color channel at a maximum level and the other color channels at minimum levels;

measuring an emission spectrum of the display for a minimum display level;

assuming an emission spectrum for a light source for each of the color channels;

calculating a light leakage spectrum for each of the color channels based on the measured emission spectrum for the display and the assumed emission spectra for the light sources for each of the respective color channels; and

calculating a single-channel emission spectrum for each of the respective color channels based on the measured cumulative emission spectrum and the calculated light leakage spectrum for the color channel.

2. The method of claim 1, wherein the cumulative emission spectrum of the display comprises a summation of emission spectra for all of the color channels.

3. The method of claim 2, wherein the emission spectrum for each of the color channels combines the light source emission spectrum for the respective color channel and a transmission spectrum for a light valve in the display.

4. The method of claim 3, wherein the transmission spectrum is dependent upon a digital driving signal and a wavelength of the light source.

5. The method of claim 1, wherein assuming the emission spectrum for the light source comprises using a color channel reconstruction method.

6. The method of claim 5, wherein the color channel reconstruction method comprises determining the light source emission spectrum for each of the color channels based on the measured emission spectra for the color channels, an inverted contrast ratio for the display, and an assumed transmission spectrum for a light valve in the display.

7. The method of claim 1, wherein, at the minimum display level, all of the channels operate at minimum levels in response to minimum digital driving signals to generate a black display.

8. The method of claim 1, wherein the plurality of color channels comprises a red channel, a green channel, and a blue channel.

9. The method of claim 1, wherein the display comprises a liquid crystal display (LCD).

10. A multi-channel display system comprising:

a display;

a plurality of color channels in the display;

a light source and a light valve to model each of the color channels; and

means for driving the light valve based on a color profile defined by single-channel emission spectra, the single-channel emission spectra calculated from measured cumulative emission spectra and light leakage spectra for each of the color channels.

11. The multi-channel display system of claim 10, further comprising a liquid crystal display (LCD).

12. The multi-channel display system of claim 10, wherein the light source comprises a backlight and a light filter.

13. The multi-channel display system of claim 10, wherein the light valve comprises fixed polarizers and rotating liquid crystal cells (LCC).

14. The multi-channel display system of claim 13, wherein the LCC rotation depends on a wavelength of the light source and a digital driving signal.

15. The multi-channel display system of claim 10, wherein the plurality of color channels comprises a red channel, a green channel, and a blue channel.

16. The multi-channel display system of claim 10, wherein the driving means sets a digital driving signal of the light valve based on the color profile.

17. The multi-channel display system of claim 10, wherein the light leakage spectrum is calculated based on a measured emission spectrum for the display at a minimum level and assumed emission spectra for the light sources.

18. A method comprising determining a single-channel emission spectrum for each of a plurality of color channels of a display based on a measured emission spectrum and a light leakage spectrum for the respective color channel.

19. The method of claim 18, further comprising calculating the light leakage spectrum based on a measured emission spectrum for the display at a minimum level and assumed emission spectra for light sources within the display.

20. The method of claim 19, further comprising assuming the emission spectrum for the light source using a color channel reconstruction method.

21. The method of claim 20, wherein the color channel reconstruction method comprises determining the light source emission spectrum for each of the color channels based on the measured emission spectra for the color channels, an inverted contrast ratio for the display, and an assumed transmission spectrum for a light valve in the display.

22. The method of claim 18, wherein the measured emission spectrum for the color channel comprises the respective color channel at a maximum level and the other channels at minimum levels.

23. The method of claim 18, wherein the plurality of color channels comprises a red channel, a green channel, and a blue channel.

24. The method of claim 18, wherein the display comprises a liquid crystal display (LCD).

25. A computer-readable medium comprising instructions for causing a programmable processor to:

receive a cumulative emission spectrum for each of a plurality of color channels of a display with the respective color channel at a maximum level and the other color channels at minimum levels;

receive an emission spectrum of the display for a minimum display level;

assume an emission spectrum for a light source for each of the color channels;

calculate a light leakage spectrum for each of the color channels based on the measured emission spectrum for the display and the assumed emission spectra for the light sources for each of the respective color channels;

calculate a single-channel emission spectrum for each of the respective color channels based on the measured cumulative emission spectrum and the calculated light leakage spectrum for the color channel; and

drive a light valve in the display based on a color profile defined by the single-channel emission spectrum.

26. The computer-readable medium of claim 25, further comprising instructions to cause the processor to assume the emission spectrum for the light source using a color channel reconstruction method.

27. The computer-readable medium of claim 26, wherein the color channel reconstruction method comprises determining the light source emission spectrum for each of the color channels based on the received emission spectra for the color channels, an inverted contrast ratio for the display, and an assumed transmission spectrum for the light valve.

28. The computer-readable medium of claim 26, wherein the light valve is driven by a digital driving signal based on the color profile.